MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

THN3221 – HIGH-SPEED NETWORKS

(All Sections / Groups)

03 MARCH 2016
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 printed pages including cover page with 7 questions only.

2. Attempt **SIX** out of **SEVEN** questions. All questions carry equal marks and the distribution of marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Question 1 [10 Marks]

(a) Give **TWO (2)** reasons for the need of protocols in communication.

[2 Marks]

(b) Give **TWO (2)** reasons why do we need fragmentation and reassembly in IP networks?

[4 Marks]

(c) Consider two stations A and B, 50 km apart that can communicate using either a 50 Mbps satellite link or a 33.6 Kbps wired link. Which link would you use to transfer a large file? Justify your answer.

[2 Marks]

(d) How is flow control is handled in Frame Relay?

[2 Marks]

Question 2 [10 Marks]

(a) Differentiate between Storage Area Network (SAN) and Network-Attached Storage (NAS)

[4 Marks]

(b) Differentiate between iSCSI and Fibre Channel in terms of their transmission speed, maximum connecting distance, material, and type of switches used.

[4 Marks]

(c) Describe the second and third generations of fiber optics network.

[2 Marks]

Question 3 [10 Marks]

(a) Discuss the motivations on IP over WDM deployments.

[5 Marks]

(b) Draw a diagram to show a simple network with SONET equipment. Indicate clearly the line, section, and path layers in your diagram.

[4 Marks]

(c) What is the duration of an STS-1 frame?

[1 Mark]

Continued ...

Question 4 [10 Marks]

(a) On what condition does the queue is formed in a network? List **TWO (2)** characteristics of queuing process?

[2 Marks]

(b) Define traffic intensity in queuing analysis? Write Little's formula for single server queue?

[4 Marks]

(c) Differentiate between Single Server and Multi Server Queue.

[4 Marks]

Question 5 [10 Marks]

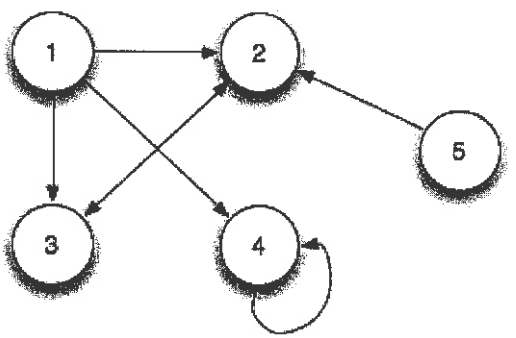
(a) Discuss **TWO (2)** strategies for congestion avoidance with explicit signaling.

[4 Marks]

(b) Identify **ONE (1)** situation where retransmission is required in TCP communication.

[1 Mark]

(c) Write the adjacency matrix for the following network diagram.



[5 Marks]

Continued ...

Question 6 [10 Marks]

(a) Briefly explain the term Autonomous System (AS). State **TWO (2)** routing protocols used in information exchange between routers within AS and in different ASs.

[4 Marks]

(b) List **TWO (2)** problems caused by fluttering.

[2 Marks]

(c) Describe a solution for counting to infinity problem in RIP implementation.

[2 Marks]

(d) Why resource reservation is needed in multicast transmission?

[2 Marks]

Question 7 [10 Marks]

(a) What are the types of reservation style used in RSVP?

[3 Marks]

(b) Describe differentiated services (DS) in the context of network traffic management.

[3 Marks]

(c) Describe the tasks that will be performed by network buffer, given an average queue size is within the range of minimum to maximum threshold in RED algorithm.

[4 Marks]

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